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Progress Letter for Period

1 October - 1 November 1964

MODULATED-LIGHT FILM VIEWER SYSTEM

STATINTL [redacted]

16 November 1964

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218-52A (5-63)
REF: ENGINEERING PROCEDURE S-017

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1. Progress of Work to End of Period

The objective of this program is to determine the feasibility of a Modulated-Light Film Viewer that will provide a variable back-light intensity according to the density and spatial frequency of the image being backlighted. Effort during this reporting period consisted of conceptual studies in the area of detection of the transmission amplitudes and frequencies along with the associated backlighting techniques.

The closed-loop flying spot scanner modulation breadboard was reconstructed utilizing a 5-inch P16 CRT and the flat transparent detector described in the previous report. Open loop response measurements were made using this breadboard in combination with a photomultiplier that detected the edge light from the detector. These tests indicate that the persistence of the Fluorescin is at least as short as the P16 phosphor and should provide no frequency response limitation.

In an effort to obtain a video bandwidth exceeding that obtainable with the P16 phosphor, a "blue flash" of the P15 phosphor was investigated. This initial blue flash has a persistence of about 1/3 that of the P16 however, tests showed that the longer persistence green of the P15 overlaps the spectrum of the initial flash and cannot be readily filtered out.

The video feedback amplifier has been completed and tested with

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the equipment. It was found that the loop oscillated at around one cycle per second and at two megacycles depending upon the gain of the loop. This oscillation originated due to ground loops and power supply deficiencies.

The characteristics of various phosphor compounds are being investigated in order to arrive at the optimum phosphors for both backlighting and detection.

2. Problem Areas Encountered

The most immediate problem is that of the above mentioned oscillations in the closed loop operation. Another problem is the design of a single light modulated viewer that can be used to view the complete width of a 9-inch film and also be used for detailed viewing through a microscope.

3. Projected Work for Next Period

Work will continue on expanding the bandwidth of the closed loop system. New fluorescent materials will be obtained and an attempt to compound these in conjunction with fiber optics light piping will be made. An investigation into the availability of a fiber optics faceplate for illumination of the transparency will be conducted. A study of the general arrangement of the viewer will be continued.

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5. Confirmation of Verbal Agreements

No verbal agreements were made during this period.